A SURVEY OF REASONS FOR ENCOUNTER AND DIAGNOSES IN AMBULATORY PRIMARY CARE: TYGERBERG SUB DISTRICT, CAPE TOWN METROPOLE.

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“Declaration

I, the undersigned, hereby declare that the work contained in this assignment is my original work and that I have not previously submitted it, in its entirety or in part, at any university for a degree.

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Date: 26 August 2011

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ABSTRACT

Background

Recent studies in South Africa have shown the South African healthcare system to be overloaded with a quadruple burden of diseases. This work, however, is based on mortality data and therefore does not shed light on how these diseases present at the primary care level. A study of why people actually attend primary care facilities and what diagnoses they receive will complement the work on burden of disease. In essence this will tell us the interaction between how ambulatory primary care interfaces with the expected burden of diseases. Obtaining such knowledge will help gain more insight into how the health system is functioning, it can guide the training of primary care providers and can also assist health system managers and policy planners gain a more comprehensive view of how primary care is interacting with the burden of diseases in their strategic planning.

Aim

To determine all reasons for encounter and diagnoses found among ambulatory primary care patients, as well as to describe the case mix of reasons for encounter and diagnoses in relation to age, sex, and type of healthcare provider (doctor or nurse).

Method

The study design was a prospective cross-sectional survey. Four community health centres were randomly selected in the Tygerberg sub-district, Cape Town, Western Cape. Doctors and nurses recorded the age, sex, reasons for encounter (RFE) and diagnoses of patients seen on 5 separate days over the course of one year. RFEs and diagnoses were coded using the International Classification of Primary Care-Version 2 (ICPC-2) and analysed with descriptive statistics.

Results

A total of 2330 encounters were recorded; 1395 (60.0%) by a doctor and 935 (40.0%) by a nurse. The mean age of the sample was 42.5 years. 1488 (63.9%) were female and 840 (36.1%) were male. The top RFE and diagnoses were dominated by non-communicable chronic diseases (hypertension, arthritis, diabetes, asthma, COPD). Cough and headache were the commonest presenting symptoms. The most common RFE (cardiovascular follow up appointment) and diagnosis (hypertension uncomplicated) was identical for both doctors and nurses. The top four RFE were the same for males and females, but in a slightly different order; cardiovascular follow up appointment, cough, cardiovascular repeat medication and headache. HIV/AIDS, TB, children, women's health and injuries/trauma were all less than expected from the burden of disease study. Psychological and social problems were thought to be under diagnosed.

Conclusion

Ambulatory primary care in the Tygerberg sub district of Cape Town metropole is dominated by non-communicable chronic diseases, especially amongst middle aged adults. Children, HIV, TB, injuries and reproductive health issues are under represented in the survey mainly because of the fragmentation of primary care services. Mental health disorders and social problems are poorly recognised and seldom diagnosed which may indicate a poor bio-psycho-social approach to assessment of patients.

The findings of this survey have important implications for training of and guideline development for primary healthcare providers, which may need to concentrate more on chronic non-communicable diseases, mental illnesses, social problems as well as develop a clear approach to the assessment of common reasons for encounter. The findings also have bearings on health managers and policy planners who need to scale up service delivery at primary care level by creating more integrated, comprehensive services. These changes will ultimately ensure a better, more efficient healthcare system both at primary care level and overall.

INTRODUCTION

Primary health care clinics play an important and unique role in the health care system in South Africa as they are the first point of entry into the health care system for the majority of South Africans. The primary care providers are gate keepers for secondary and tertiary care. Thus if diseases or problems are not managed correctly at the primary level of care then it impacts on all other levels of care too.[1] The WHO states that a good system of primary care is essential in order to have an efficient and equitable health care system.[2]

Recent studies in South Africa have shown the South African healthcare system to be overloaded with a quadruple burden of diseases comprising maternal and child health issues, chronic non-communicable diseases, injuries and trauma, HIV/AIDS and TB.[3,4,5] These burden of disease studies are based on mortality data and therefore do not shed light on how these diseases present at the primary care level.. A study of why people actually attend primary care facilities and what diagnoses they receive will complement the work on burden of disease. In essence this will tell us how ambulatory primary care interfaces with the expected burden of diseases.

Obtaining such knowledge about the patterns of illness which confront primary health care will help practitioners, health system managers, educators and guideline developers gain more insight into how the health system is functioning in order to help improve health service delivery. More specifically, this information can be used to guide the training of primary care providers. Health system managers and policy makers can also make use of this information to gain a more comprehensive view of how primary care is currently interfacing with the burden of diseases in their strategic planning. Furthermore, the information may assist in terms of human resources planning and infrastructure.

Patients often present to primary care with multiple symptoms and are often diagnosed with more than one diagnosis. Healthcare providers need to be trained to deal with the common presentations and diagnoses that they will encounter.[6] The members of the Family Medicine Education Consortium (FaMEC – comprising all 8 University departments that offer family medicine in South Africa) are involved in the training of doctors, at both an undergraduate and postgraduate level, as well as primary care nurses, to work in primary care settings. FaMEC expressed verbally that there is a need for a survey of reasons for encounter and

diagnoses in primary care to guide the development of training programmes for clinical assistants, doctors and nurses.

The Knowledge Translation Unit (KTU) of the University of Cape Town Lung Institute has implemented the PALSA Plus (Practical Approach to Lung Health and HIV & AIDS in South Africa) project in public primary care facilities in the Western Cape and Free State provinces.[32] PALSA Plus aims to improve the quality and efficiency of primary care service delivery by combining symptom and sign-based management guidelines with educational outreach for frontline health workers. The KTU currently wants to expand their guidelines. Since these guidelines are syndromic, that is based on the presenting symptom(s), their development requires evidence based knowledge on the reasons for encounter and diagnoses made at public primary care facilities. Therefore part of the motivation for this study is to provide this information to those, like KTU, that are developing guidelines for primary care.

There is generally a paucity of research in primary health care in Africa.[7] Most research originates from academic departments of family medicine or from collaborative initiatives with researchers in developed countries. "Although 90% of the world's 'potential years of life lost' belong in the developing world, only 5% of the global research funds are devoted to studying the developing world's health problems."[7]

There are no up-to-date studies detailing the reasons for encounter in South Africa. The few studies of this nature are either out-dated or have narrow geographic representation.[8-13] Most of these studies have focused on doctor providers although the majority of public sector primary care in the country is provided by nurses.[31] Only one published study was found where nurses were included; this is a study looking at the spectrum of problems presenting to health care facilities in an area of high poverty in the Eastern Cape.[11] The contribution of nurses to primary care research is crucial as they form the majority of health care providers that see patients in the primary care clinics.[14]

Most existing studies focus on the providers' diagnoses in assessing the nature of the work in practices. However, patients' reasons for encounter (RFE) constitute a "practical source of patient information . . . useful for research and education".[15] They reflect the expectations of and demands on the practice and may be very different from the diagnoses.[16]

Only one similar study in another African country was identified, but this was based on Nigerian private practice.[17] National morbidity surveys have been carried out in the UK,

Australia, USA and Sri Lanka.[18-21] In the Netherlands, Poland, Japan and Norway such data are collected through ICPC -based electronic patient records.[22-24] Smaller studies looking specifically at reasons for encounter and diagnoses, which were also coded using the ICPC system were performed in China, Tunisia and Finland.[25-27]

AIM AND OBJECTIVES

To determine the range and prevalence of reasons for encounter and diagnoses found among ambulatory patients attending public primary care clinics in the Tygerberg sub-district, Cape Town, Western Cape.

Primary objectives:

- To identify all reasons for encounter (e.g. presenting symptoms) in patients seen at primary level clinics by healthcare provider (doctors or nurses).
- To identify healthcare provider-reported diagnoses (pre-existing or new) of patients seen at primary level clinics.

Secondary objectives:

- To measure the average number and range of reasons for encounter per patient.
- To measure the average number and range of provider-reported diagnoses per patient.
- To describe the case mix of reasons for encounter and the diagnoses in relation to:
    - Age of clients
    - Sex of clients
    - Type of provider (doctor or nurse practitioner)

METHODS

The study design is a prospective cross-sectional survey of ambulatory primary care patients attending public primary care clinics within the Tygerberg sub-district, Cape Town, Western Cape. This study formed part of a larger multi-centre survey across 4 provinces in South Africa. Three other sub-districts in the Western Cape were also included in the larger study.

Setting

Tygerberg is an urban area located in the Cape Peninsula 25 km north-east of the centre of Cape Town. The majority of the people attending these health facilities are middle to lower class and Afrikaans speaking.

There are 7 Community Health Centres (CHC) and 16 City of Cape Town clinics in the Tygerberg sub-district. There is one district hospital called Karl Bremer Hospital, which also functions as a secondary hospital and one tertiary hospital called Tygerberg Hospital. There is an overlap of services offered between the CHC's and City Clinics. Generally speaking the CHC's provide curative services for acute conditions, manage chronic conditions in adults, run emergency services and offer some preventative services, while services for children and TB are predominantly offered by the City of Cape Town Clinics. There is an overlap of anti-retroviral roll out programmes.

Sampling and sample size

The sample size for the Western Cape as a whole was based on two considerations: firstly the number of health care workers a research assistant could train and support across a number of facilities and secondly to ensure that the secondary reasons for encounter would be encountered in large enough numbers (>100). The sample size per province was therefore the product of the number of health care workers that could be handled (60), the number of sampling days for each health care worker (5) and the number of patients seen per day (20) resulting in 6000 encounters per province.

The sample size required from each sub-district to make up the total of 6000 for the Province was stratified according to the population of the sub-district. Tygerberg sub district with a population of 434896 was expected to recruit 22 health workers from 4 CHCs and record 2200 consultations.

The study was implemented in 4 randomly selected CHCs: Belville South, Dirkie Uys, Elsies River and Delft. The City of Cape Town declined permission to include their primary care clinics in the survey. The reason given by the City of Cape Town for not participating was they felt the information gained from the study provided no additional information from what was already being collected at their clinics and therefore didn't want the staff to waste their time on it.

Primary care practitioners (nurses and doctors) from the selected facilities were then invited to participate on an optional basis (see Appendix 1).

Inclusion criteria for nurses/doctors:

- should be willing to participate, and motivated
- should be available to participate, ideally for 12 months on specified dates.
- should NOT exclusively be involved in a vertical programme (e.g. HIV clinic, TB clinic) and seeing only one type of patient.
- should be seeing ambulatory patients.

All nurses and doctors were trained in data collection and received a small financial incentive at the end of the project for their time and effort.

The sampling period was stratified by time to account for seasonality and day to account for different patterns of attendance throughout the week. Each facility therefore was asked to collect data for 1 day on 5 occasions (2 months apart) throughout the year and on a different day of the week each time.

Data Collection

All sequential ambulatory patients (adults or children) presenting to the primary care healthcare providers (nurses or doctors) on the study days were included in the study. Healthcare providers participating in the study were provided with a data collection sheet (see Appendix 2) on which they were asked to record the following patient information: age, sex, reasons for encounter as reported in the patient's own words (maximum of five reasons for encounter per consultation) and the diagnoses (new or pre-existing) the healthcare providers ascribed (maximum of five per consultation).

Data Analysis

The International Classification of Primary Care – Version 2 (ICPC-2) was used to code the data according to reasons for encounter (RFE) and the diagnoses defined. The ICPC-2 was developed by the World Organisation of National Colleges, Academies and Academic Associations of General Practitioners/ Family Physicians (WONCA) and accepted by the World Health Organizations (WHO) as a member of the Family of international

Classifications and is widely used internationally in both routine daily practice and for research.[28,29] It is the main ordering principle of its domain in documenting the burden of disease in primary care settings in Europe [24,28] and Australia.[30] Using this international coding system therefore has the important advantage of aiding the comparability of data from different countries.

ICPC-2 operates a bi-axial coding structure: the first axis represents 17 body systems which are called chapters (e.g. respiratory, neurological, etc), and the second represents 7 components: (i) complaints and symptoms; (ii) diagnostic, screening and preventative activities; (iii) medication, treatment, procedures; (iv) test results; (v) administrative; (vi) referrals and other reasons for encounter; and (vii) diagnosis/disease.

Before the study began, training was given on the coding system by the principal investigator; Prof Mash to all the co-investigators participating in larger study which included me. This was followed up with further discussions on the coding which took place via email during the study period. The error rate for coding was calculated by comparing the researcher's coding with an independent coding of 20 randomly selected data collection sheets. Independent coding was performed by the ICPC-2 trainer. The error rate for RFE was found to be 12.8% (95% CI: 8.8 and 16.9) and for diagnosis 10.1% (95% CI: 6.3 and 13.9).

Coded symptoms and diagnoses were captured electronically in a Microsoft Excel spreadsheet. From this the Centre for Statistical Consultation at Stellenbosch University calculated the frequency of RFEs and diagnoses and the mean number of reasons for encounter and diagnoses per patient. The reasons for encounter and diagnoses were also analysed by sex, age and type of practitioner.

Piloting

The data capture sheet was sampled at one selected CHC in the Western Cape in 2009. The tools were found to be understandable and practical.

Ethical Considerations

Ethical approval [NO7-8-192] for the study was obtained from the Health Research Ethics Committee of the Faculty of Health Sciences, University of Cape Town and the University of Stellenbosch. Permission was also obtained from the Provincial Department of Health as well as from the selected health facilities. Written informed consent was obtained from each of the

participating health providers (doctors and nurses). The identity of the provider was not included in the analysis or reporting.

Given that the survey did not involve administering an intervention, and that patients will in any event be seen by the provider in the usual manner, patients were not approached for their individual consent to participate in the study. Additionally, no patient name or other unique identifier was collected.

RESULTS

The patient sample

A total of 2330 encounters were recorded; 1395 (60.0%) by a doctor and 935 (40.0%) by a nurse.

Table I and Figure 1 show the distribution of patients according to gender and age. The mean age of the sample was 42.5 years. The majority were middle aged between 40 – 59 years (43.2%) and children aged 0-4 years made up only 165 (7.1%). The small number of children is due to the non-participation of the City of Cape Town clinics in the survey. The percentage of older adults and elderly patients (>60 years) made up 17.8%.

Of the total number of patients, 1488 (63.9%) were female and 840 (36.1%) were male, giving a female/male ratio of 1.8/1 (see Table I). The reason why 2 patients are not accounted for is because there were 2 data collection sheets where no gender was entered.

Table I: Age -Gender distribution of patients (N=2328)

Age group in years	Female		Male		Subtotal	
	N	%	N	%	N	%
< 5	48	2.1	53	2.3	101	4.3
5 to 9	30	1.3	39	1.7	69	3.0
10 to 14	39	1.7	24	1.0	63	2.7
15 to 19	40	1.7	27	1.2	67	2.9
20 to 29	177	7.6	102	4.4	279	12.0
30 to 39	225	9.7	103	4.4	328	14.1
40 to 49	332	14.3	180	7.7	512	22.0
50 to 59	318	13.7	177	7.6	495	21.3
60 to 69	168	7.2	86	3.7	254	10.9
70 to 79	82	3.5	37	1.6	119	5.1
> 80	29	1.2	12	0.5	41	1.8
Total	1488	63.9	840.0	36.1	2328.0	100.0

The distribution by age and gender showed that the proportion of males and females consulting in the different age groups was similar in all age groups with more females than males presenting, except for children <9 years, in whom more male than female children were taken to the healthcare provider.

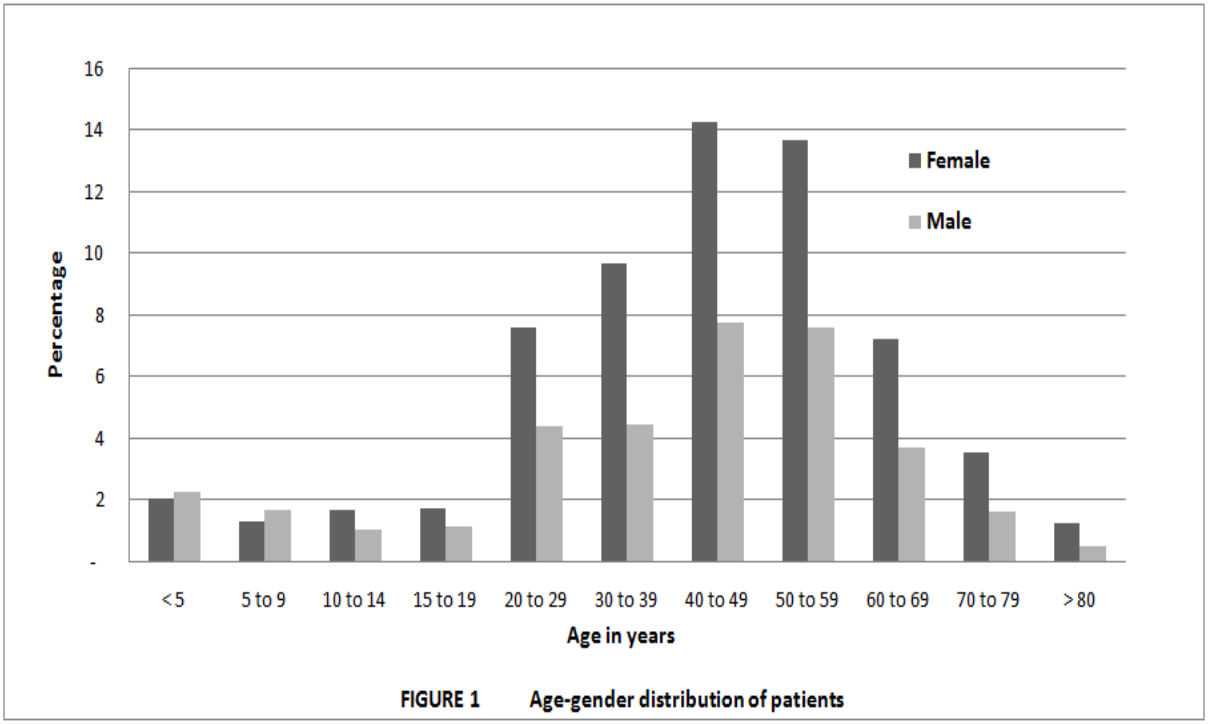

FIGURE 1 Age-gender distribution of patients

Reasons for encounter and the diagnoses

There were 3954 RFE (mean of 1.7 per encounter) and 3622 diagnoses (mean of 1.5 per encounter) recorded.

Table II shows the average number of RFE and diagnosis according to doctor/nurse and according to gender. There were more RFE recorded by nurses than doctors and more RFE presented by females than males. The P-values for doctors vs. nurses comparing the RFEs: P=0.01 and comparing diagnoses: P=0.59. The P-values for females vs. males comparing RFEs: P<0.01 and comparing diagnoses: P<0.01.

Table II Mean RFE and diagnoses according to gender and healthcare provider

	Male	Female	Doctor	Nurse
RFE	1.6	1.8	1.6	1.8
Diag	1.5	1.6	1.6	1.5

Table III shows the top 20 reasons for encounter and Table IV the top 20 diagnoses. When looking at the tables you will see there are more RFE and diagnoses than 20, this is because some were equally ranked (this applies to subsequent tables too). Non-communicable chronic diseases (hypertension, arthritis, diabetes, asthma, COPD) dominate both the RFE and diagnoses. Cough and headache were also found to be the most frequent presenting symptoms. The ICPC code for Infectious disease other/NOS was used to code only sexually transmitted diseases so this item should be viewed in this way.

Table III: The top 20 reasons for encounter (RFE) ranked in descending order of frequency (N=3954)

Order	RFE	ICPC Code	Frequency	%
1	Cardiovascular follow up appointment	K64	315	8.8
2	Cough	R05	222	6.2
3	Headache	N01	149	4.1
4	Cardiovascular repeat medication	K50	148	4.1
5	Abdominal pain/ cramps general	D01	89	2.5
6	Back symptom/ complaint	L02	88	2.4
7	Throat Symptom/ Complaint	R21	80	2.2
8	Respiratory Symptom/ Complaint Other	R29	71	2.0
9	Pain General/ Multiple Sites	A01	68	1.9
	Diabetic repeat medication	T50	68	1.9
10	Leg/ Thigh symptom/ Complaint	L14	64	1.8
11	Elevated Blood pressure	K85	59	1.6
12	Rash Generalized	S07	54	1.5
13	Fever	A03	52	1.4
	Pain Respiratory System	R01	52	1.4
14	Foot/ Toe symptom/ Complaint	L17	50	1.4
15	Ear Pain/ Earache	H01	47	1.3
16	Respiratory follow up appointment	R64	45	1.3
	Pruritis	S02	45	1.3
	Rash Localized	S06	45	1.3
17	Diarrhoea	D11	43	1.2
18	Weakness/ tiredness general	A04	41	1.1
19	Joint symptom/ Complaint NOS	L20	38	1.1
20	Hand/ Finger symptom/ complaint	L12	37	1.0
	Musculoskeletal follow up appointment	L64	37	1.0

Table IV: The top 20 diagnoses ranked in descending order of frequency (N=3622)

Order	Diagnosis	ICPC code	Frequency	%
1	Hypertension Uncomplicated	K86	812	22.4
2	Osteoarthrosis Other	L91	249	6.9
3	Diabetes Non-insulin Dependant	T90	247	6.8
4	Asthma	R96	100	2.8
5	Acute Bronchitis/ Bronchiolitis	R78	86	2.4
6	Acute Upper Respiratory Infection	R74	85	2.3
7	HIV Infection/ AIDS	B90	79	2.2
8	Epilepsy	N88	76	2.1
9	Chronic Obstructive Pulmonary Disease	R95	74	2.0
10	Cystitis/ Urinary Infection Other	U71	59	1.6
11	Acute Otitis Media/ Myringitis	H71	53	1.5
12	Tuberculosis	A70	51	1.4
13	Tonsillitis Acute	R76	47	1.3
14	Gastrointestinal Infection	D70	44	1.2
15	Gastroenteritis presumed infection	D73	40	1.1
16	Lipid Disorder	T93	39	1.1
	Ischaemic Heart Disease	K74 & K76	39	1.1
17	Influenza	R80	34	0.9
18	Muscle Pain	L18	29	0.8
	Dermatophytosis	S74	29	0.8
19	Infectious Disease other/ NOS	A78	28	0.8
20	Dermatitis Contact/ Allergic	S88	26	0.7

When the RFE and diagnoses are listed in order of frequency by ICPC Chapters, the sequence is found to be similar for both (Table V). Respiratory, cardiovascular and musculoskeletal chapters make up almost half (47.4%) of the RFE and more than half (54.5%) of the diagnoses. The psychological chapter was not found to be common for both RFE and diagnoses; at only 2.4% and 2.7% respectively, while the social chapter was found to be even less frequent; in second to last position out of 17 chapters at only 0.6%.

Table V RFE and Diagnosis by ICPC chapter in descending order of frequency

Order	RFE by chapter	Total	%	Diagnosis by chapter	Total	%
1	Respiratory	695	17.6%	Cardiovascular	993	27.4%
2	Cardiovascular	633	16.0%	Respiratory	542	15.0%
3	Musculoskeletal	546	13.8%	Musculoskeletal	439	12.1%
4	General and unspecified	425	10.7%	Endocrine/ Metabolic and Nutritional	351	9.7%
5	Digestive	301	7.6%	Skin	222	6.1%
6	Neurological	283	7.2%	Digestive	212	5.9%
7	Skin	259	6.6%	General and unspecified	176	4.9%
8	Endocrine/ Metabolic and Nutritional	240	6.1%	Neurological	144	4.0%
9	Female Genital	111	2.8%	Psychological	97	2.7%
10	Psychological	93	2.4%	Blood	93	2.6%
11	Ear	83	2.1%	Female Genital	81	2.2%
12	Eye	73	1.8%	Ear	80	2.2%
13	Blood	72	1.8%	Urological	80	2.2%
14	Urological	68	1.7%	Eye	47	1.3%
15	Social Problems	25	0.6%	Pregnancy, Childbearing, Family Planning	30	0.8%
16	Male Genital	24	0.6%	Social Problems	22	0.6%
17	Pregnancy, Childbearing, Family planning	23	0.6%	Male Genital	13	0.4%
Total		3954	100%		3622	100%

The top 10 RFE and diagnoses by doctors and nurses are shown in Tables VI and VII. The most common RFE (cardiovascular follow up appointment) and diagnosis (hypertension uncomplicated) was identical for both doctors and nurses.

Table VI The top 10 RFE and Diagnoses by Doctors in descending order of frequency

Order	RFE	ICPC Code	Frequency	%	Diagnosis	ICPC Code	Frequency	%
1	CVS follow up appointment	K64	141	6.1	Hypertension uncomplicated	K86	502	22.9
2	Cough	R05	105	4.6	Diabetes non-insulin dependant	T90	160	7.3
3	Headache	N01	98	4.3	Osteoarthrosis other	L91	155	7.1
4	CVS repeat medication	K50	76	3.3	COPD	R95	62	2.8
5	Back symptom/ complaint	L02	62	2.7	Asthma	R96	59	2.7
6	Pain general/ multiple sites	A01	52	2.3	Acute bronchitis/ bronchiolitis	R78	56	2.6
7	Abdominal pain/ cramps general	D01	49	2.1	Epilepsy	N88	46	2.1
8	Throat symptom/ complaint	R21	46	2.0	Acute URI	R74	42	1.9
9	Diabetic follow up appointment	T64	45	2.0	Cystitis/ urinary infection other	U71	33	1.5
10	Elevated blood pressure	K85	44	1.9	Gastrointestinal infection	D70	32	1.5

CVS = Cardiovascular System COPD = Chronic Obstructive pulmonary disease URI = Upper Respiratory Infection

Table VII The top 10 RFE and Diagnoses by Nurses in descending order of frequency

Order	RFE	ICPC Code	Frequency	%	Order	Diagnosis	ICPC Code	Frequency	%
1	CVS follow up appointment	K64	174	10.5	1	Hypertension uncomplicated	K86	310	21.6
2	Cough	R05	117	7.1	2	Osteoarthrosis/ other	L91	94	6.6
3	CVS repeat medication	K50	72	4.3	3	Diabetes non-insulin dependant	T90	87	6.1
4	Diabetic follow up appointment	T64	53	3.2	4	HIV Infection/ AIDS	B90	60	4.2
5	Headache	N01	51	3.1	5	Acute URTI	R74	43	3.0
6	Abdominal pain/cramps general	D01	40	2.4	6	Asthma	R96	41	2.9
7	Throat symptom/ complaint	R21	34	2.0	7	Acute otitis media/ myringitis	H71	38	2.7
	Diabetic repeat medication	T50	34	2.0	8	Acute Tonsillitis	R76	34	2.4
	Rash generalized	S07	33	2.0	9	Epilepsy	N88	30	2.1
8	Fever	A03	32	1.9		Acute Bronchitis / Bronchiolitis	R78	30	2.1
9	Diarrhoea	D11	28	1.7	10	Cystitis/ urinary Infection other	U71	26	1.8
	Leg/thigh symptom/ complaint	L14	28	1.7					
10	Respiratory symptom/complaint	R29	28	1.7					

CVS = Cardiovascular System URTI = Upper respiratory tract infection

Table VIII: The top 10 RFE and diagnoses for women

Order	RFE	ICPC Code	Frequency	%	Order	Diagnosis	ICPC Code	Frequency	%
1	CVS follow up appointment	K64	219	8.4	1	Hypertension uncomplicated	K86	565	23.7
2	Cough	R05	129	5.0	2	Osteoarthrosis other	L91	194	8.1
3	Headache	N01	113	4.3	3	NIDDM	T90	180	7.6
4	CVS repeat medication	K50	101	3.9	4	Asthma	R96	73	3.1
5	Diabetic follow up appointment	T64	70	2.7	5	HIV Infection/ AIDS	B90	59	2.5
6	Abdominal pain/ cramps	D01	66	2.5	6	Acute bronchitis/ bronchiolitis	R78	55	2.3
7	Back symptom/ complaint	L02	57	2.2	7	Acute URTI	R74	51	2.1
8	Throat symptom/ complaint	R21	56	2.2	8	Cystitis/ urinary infection other	U71	45	1.9
9	Diabetic repeat medication	T50	49	1.9	9	COPD	R95	38	1.6
10	Pain general/ Multiple sites	A01	47	1.8	10	Acute otitis media/ myringitis	H71	32	1.3
						Tonsillitis acute	R76	32	1.3

The top 10 RFE and diagnoses analysed according to gender are shown in Tables VIII and IX. The top four RFE are the same, but in a slightly different order; cardiovascular follow up appointment, cough, cardiovascular repeat medication and headache. Epilepsy was diagnosed more often in males than females.

Table IX: The top 10 RFE and diagnoses for men

Order	RFE	ICPC Code	Frequency	%	Order	Diagnosis	ICPC Code	Frequency	%
1	CVS follow up appointment	K64	96	7.1	1	Hypertension uncomplicated	K86	565	23.7
2	Cough	R05	93	6.9	2	Osteoarthrosis other	L91	194	8.1
3	CVS repeat medication	K50	47	3.5	3	Diabetes non-insulin dependant	T90	180	7.6
4	Headache	N01	36	2.7	4	Asthma	R96	73	3.1
5	Back symptom/ complaint	L02	31	2.3	5	HIV Infection/ AIDS	B90	59	2.5
	Respiratory symptom/ complaint other	R29	31	2.3	6	Acute bronchitis/ bronchiolitis	R78	55	2.3
6	Diabetic follow up appointment	T64	28	2.1	7	Acute URTI	R74	51	2.1
7	Fever	A03	27	2.0	8	Cystitis/ urinary infection other	U71	45	1.9
8	Throat symptom/ complaint	R21	24	1.8	9	COPD	R95	38	1.6
9	Abdominal pain/ cramps general	D01	23	1.7	10	Acute otitis media/ myringitis	H71	32	1.3
10	Pain general/ Multiple sites	A01	21	1.6		Tonsillitis acute	R76	32	1.3
	Rash generalized	S07	21	1.6					

Due to the small sample size in the less than 5 year age group only the top five RFE and diagnoses have been included in Table X. Infections of the respiratory and gastro-intestinal systems top the list followed by growth delay.

Table X The top 5 RFE and Diagnoses for under 5 years old, in descending order of frequency

Order	RFE	ICPC Code	Frequency	%	Order	Diagnosis	ICPC Code	Frequency	%
1	Cough	R05	33	20.0	1	Acute otitis media/ myringitis	H71	16	12.4
2	Fever	A03	14	8.5	2	Pneumonia	R81	9	7.0
3	Rash generalized	S07	12	7.3	3	Gastroenteritis presumed infection	D73	8	6.2
4	Diarrhoea	D11	11	6.7	4	Acute URTI	R74	7	5.4
5	Vomiting	D10	10	6.1		Acute bronchitis/ bronchiolitis	R78	7	5.4
					5	Growth delay	T10	5	3.9

DISCUSSION

The findings show that the bulk of the workload for healthcare providers is due to chronic non-communicable diseases, particularly amongst the middle aged group. The leading non-communicable diseases were cardiovascular diseases, mainly hypertension, followed by osteoarthritis, diabetes, COPD and asthma. This highlights the importance of the six management principles identified by the WHO for chronic diseases; adequate continuity of care, collaboration between health professionals, patients and families, empowerment of patients and their understanding of the disease with personal lifestyle changes as well as the use of clinical guidelines.[31]

The pattern seen here is different to that seen in other African settings where cardiovascular disease was low on the list of diagnoses, such as in the Eastern Cape[11] and Nigerian[17] studies where it made up only 1.1% and 1.7% respectively. The high prevalence of non-communicable diseases in primary care is similar to that found in Japan, Poland, Netherlands[22] and China.[25] The reason why the morbidity pattern in this study setting seems to be quite similar to that of the first world countries mentioned above is because this study only included ambulatory primary care patients. The study excluded services; such as; injuries and trauma, maternal and child health services, HIV/AIDS and TB which would influence the morbidity pattern significantly if they were present.

The burden of disease study in the Western Cape shows cardiovascular disease to be the leading cause of death (25%) among both men and women.[3,4] Ischaemic heart disease was the largest single cause of death, accounting for 12% of all deaths during 2000. This was followed by stroke (8.8%), HIV/AIDS (8.4%), then TB (6.8%). This study reiterates this pattern by showing the very high proportion of patients presenting to primary health care for cardiovascular related chronic non-communicable diseases.

The demand for care is then followed by acute complaints (cough, headache, abdominal pain, throat symptoms and respiratory symptoms). Respiratory symptoms are found to be the commonest complaint in many studies.[7,8,11,21,22,25] This has a bearing on the training of primary care providers who should have an approach to the assessment of these common symptoms and signs as they present in primary care. This list of common complaints can also

assist in designing syndromic guidelines for primary care, such as the PALSA plus guidelines.[32]

Psychological diagnoses were found to be less frequent than expected, especially depression and anxiety. Similar findings were found in the Eastern Cape, Sri Lanka, Polish and Japanese studies,[11,21,22] unlike USA and Dutch studies where the psychological problems were more prevalent.[22] When we look more specifically at the individual diagnoses we see schizophrenia to be ranked unusually higher than depression and anxiety; with schizophrenia being ranked 22nd at 0.6% whereas depression is ranked only 24th at 0.5% and anxiety even lower in 37th place at 0.2%. This low frequency is probably due to the fact that these patients often somatise their illness and present with problems like headache, generalised body pain or back symptoms and so depression is mis-diagnosed as something else.[21] Surveys on psychiatric morbidity world-wide have shown that psychological problems, which account for up to a third of all general practice consultations, are often missed.[33] It has been shown that failure to detect psychological illnesses is due to such patients presenting with only physical symptoms.[11] This indicates the necessity to train healthcare providers on how to detect mental illness especially depression and anxiety disorders.

Social problems (e.g. poverty, unemployment, social welfare problem, relationship problem, behaviour problem, etc) were also less frequently diagnosed than expected. This is highlighted by looking at statistics on intimate partner violence in South Africa. Interpersonal violence is the second highest contributor to the burden of disease and in women 62% of this is due to intimate partner violence.[3,4,34] Women present in primary care with injuries and symptoms suggestive of psychological problems, but less than 10% are recognised.[34] So we see social problems go hand in hand with psychological problems and both appear not to be fully recognised by the health care providers in this study. This may imply that primary care providers do not have a bio-psycho-social approach in assessing their patients.

Children are underrepresented in this survey as community health centres in the Cape Town metropole see mostly referred children from the clinics run by the City of Cape Town or see children after hours. Unfortunately the City of Cape Town clinics in the sub-district did not want to participate in the survey. Although the sample is small, the diagnoses are congruent with what was found in the burden of disease study in the Western Cape; with the top 5 diagnoses in descending order of frequency being acute otitis media, pneumonia,

gastroenteritis, acute bronchitis/ bronchiolitis, acute upper respiratory infection and growth delay.[3,31]

Tuberculosis has an incidence of 874/100 000 in the Western Cape,[35] however TB appears only twelfth amongst the diagnoses. HIV/AIDS represented 2.2% of the total diagnoses, which is low relative to its contribution to the burden of disease and prevalence rate of 16.9% in the Western Cape.[36] The reason why TB and HIV/AIDS is under represented in the study when compared with Western Cape statistics is because these 2 diseases are catered for in vertical clinics separate from the general ambulatory primary care included in this survey.

Consultations relating to pregnancy and contraception were also lower than expected and this is most likely due to these services been offered in midwife obstetric units and separate family planning clinics.

The burden of disease study shows violence to be ranked the 4th highest,[3] however in this study it is ranked 37th at 0.1%. This category is under represented in the study as only ambulatory primary care patients were included. Trauma and injury are seen either in emergency care services at CHCs or in the hospitals mentioned above.

Doctors vs. Nurses

Nationally the majority of primary care consultations are with nurses (86% in the larger study of which this was a part), whilst in this sub district 60% were with doctors. Although nurses saw patients with more RFEs they also made fewer diagnoses than the doctors. The results showed a statistical significant difference when comparing RFEs. It is difficult to interpret these findings without further investigation, but it may suggest that nurses are seeing the patients with more acute illnesses, whilst doctors are seeing the more complex, yet stable chronic patients. Acute patients may have more complaints that result in fewer diagnoses; while chronic patients may have more diagnoses, but fewer new complaints.

Men vs. Women

Disproportionately more women than men consulted primary care services, a phenomenon that is observed in most primary care worldwide.[11,12,21,22,25] This could imply that men have fewer reasons to attend the health centre (such as pregnancy, family planning), a higher threshold for seeking help or that services are not accessible or acceptable to them.

Cardiovascular chronic care follow up tops the list for RFE in both men and women and hypertension tops the list of diagnosis for both. The top four diagnoses are occupied by chronic diseases for both men and women this once again highlights that both men and women are equally burdened by chronic non-communicable diseases.

Implications for the study

These findings have an important bearing on under and post-graduate training of doctors and nurses (e.g. FaMEC), which should pay more attention to chronic non-communicable diseases as well as ensure healthcare providers have a clear approach to the assessment of common reasons for encounter. A more bio-psycho-social approach may also be needed to ensure that mental health and social problems are better recognised.

The development of guidelines for primary care should also take cognisance of the common presentations and diagnoses found in the study. PALSA Plus which is in the process of extending to other provinces will be making use of these results in drawing up their guidelines. The Department of Health's Essential Drug List and associated Clinical Guidelines for primary care can also gain useful information from these results, which can be applied to their future editions.

If non-communicable chronic disorders are the commonest problems in ambulatory primary care, we should ask ourselves if the health system itself is sufficiently orientated to the needs of chronic care.

This study shows that primary care in the Western Cape is dominated by chronic non-communicable diseases partly because TB, HIV/Aids as well as mother/ child services, trauma services are seen elsewhere. This fragmentation of primary healthcare services may hinder optimal and effective health care. For example; a patient with both HIV and hypertension needs to be seen on different occasions by two different health care providers, have two different sets of blood tests and receive chronic medication at different times. Health care planners should consider organizing primary care differently by integrating services together so that patients can receive comprehensive all inclusive health care.

Strengths and Limitations

The sampling proceeded according to plan with all seasons and days of the week included and the target sample of 2200 patients was achieved. ICPC-2 proved to be a quick, easy and appropriate coding system for use in South African primary care.

The population served and health system in the Tygerberg sub district is similar to several other sub districts in the Metropole, but the results may not be generalizable to the whole of the Western Cape or other provinces. Less children than expected were included in the study due to the fact that the City of Cape Town clinics did not participate in the study. The survey also excluded private general practice. Other patient categories were excluded as they receive care from other dedicated facilities. If all categories of patients excluded from the study were included i.e. maternal and child health issues, injuries/ trauma, HIV/AIDS and TB, then the conclusions for the study would probably be different. Chronic non-communicable diseases would still be frequent, but the other categories would be much more frequent too as reflected in the Burden of Disease study by Bradshaw.[3]

Errors may have occurred with the accuracy or quality of data collected by some health care providers, although this is difficult to determine. The error rate for coding of the RFE was found to be 12.8% (95% CI: 8.8 and 16.9) and for diagnoses 10.1% (95% CI: 6.3 and 13.9). Many of the errors were due to relatively small differences such as R07 (sneezing/nasal congestion) and R08 (nasal symptoms/other) or to omissions when a recorded RFE was not coded. Only the most frequent RFEs and diagnoses are presented as error will affect the ranking of less frequently recorded items more.

CONCLUSION

Ambulatory primary care in the Tygerberg sub district of Cape Town metropole is dominated by non-communicable chronic diseases, especially amongst middle aged adults. Children, HIV, TB, injuries and reproductive health issues are under represented in the survey mainly because of the fragmentation of primary care services. Mental health disorders and social problems appear to be poorly recognised and seldom diagnosed which may indicate a poor bio-psycho-social approach to assessment of patients.

The findings of this survey have important implications for training of and guideline development for primary healthcare providers, which may need to concentrate more on

chronic non-communicable diseases, mental illnesses, social problems as well as develop a clear approach to the assessment of common reasons for encounter. The findings also have bearings on health managers and policy planners who need to scale up service delivery at primary care level by creating more integrated, comprehensive services. These changes will ultimately ensure a better, more efficient healthcare system both at primary care level and overall.

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Appendix: 1 **CONSENT FORM**

University of Cape Town Lung Institute (Pty) Ltd and University of Stellenbosch, Family Medicine

Dr Ronit Okun
Family Medicine and Primary Care
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Fax No : 0865 293893

IRB No. 00001938

CONSENT FORM: NURSES/DOCTORS

We are kindly inviting you to participate in our study.

The Division of Family Medicine and Primary care, Stellenbosch University and the Knowledge Translation Unit based at the University of Cape Town Lung Institute wish to conduct a survey involving ambulatory patients and doctors/nurses seeing them. The study aims to check the reasons for encounter among patients presenting at primary facilities, as well as the various diagnoses the patients receive. You will be asked to record on a designated form the age, sex, reasons for encounter and diagnoses in patients during consultations. Such data will be collected during 5 days spread out over the year. Ethical approval for the study has been granted by the Research Ethics Committee of Stellenbosch and Cape Town Universities and the study will subscribe to the Declaration of Helsinki and to MRC and ICH guidelines. You will be notified of the findings of the survey.

Your willingness to participate in this study will be greatly appreciated. Note that your participation in this study is entirely voluntary and you may decide to not participate or withdraw from the study any time without fear of reprisal.

The survey will significantly contribute to our understanding of the conditions seen in primary care and the way that they present. The research will contribute to the development of guidelines for primary care and the design of training programmes for primary care nurses and doctors. For further information about the study, please contact Dr Ronit Okun as above.

I am **WILLING** to participate in this study (*Please tick*) ☐

Name:_____**Designation**_____

Date_____

Telephone number (w): _____

Cell number: _____

Fax number :_____

Postal address:

I am **NOT WILLING** to participate in this study(*Please tick*) ☐

Name:_____ **Designation**_____ **Date**_____

Appendix: 2 DATA CAPTURE SHEET

Facility's name:_____**Section** (e.g. TB clinic):_____

Day (circle day): **M / TU / W / TH / F**

Health worker's name: _____

Captured by (tick): Doctor ☐ /Nurse ☐ **Date:** _____

	Age	**Sex**	**Reason(s) for encounter** (maximum 5)	**Diagnosis(es)** (maximum 5)
1				
2				
3				
4				

5				
6				
7				
8				

9				
10				